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SOVIET PHYSICISTS ACTIVE IN NUCLEAR PHYSICS
AND COSMIC RAY RESEARCH

E. V. Shpol'skiy

1. Skobel'tsin, D. V. -- First to observe the path of cosmic particles in the Wilson cloud chamber. After Skobel'tsin's usage of a Wilson chamber placed in a magnetic field, this method of studying cosmic particles was widely used.
2. Alikhanov, A. I. -- Responsible for research on continuous beta spectra and on pair-formation, during which the spontaneous emission of positrons was discovered. The authenticity and accuracy of the results of this work are due largely to the use of Alikhanov's ingenious magnetic spectrograph, in which the particles are recorded by a pair of Geiger counters, included in the coincidence process.
3. Frank, I. M.; Gromov, L. V. -- Photographically studied the appearance of pairs.
4. Kurbatov, I. V.; Rusinov -- Were the first to discover the striking phenomenon of nuclear isometry (isomers) in bromine.
5. Leyppanauy, A. I. -- His laboratory devoted a great amount of research to the dispersion and absorption of neutrons.
6. Petrzhak, E. A.; Flerov, G. N. -- Discovered the unusually rare process of spontaneous fission in uranium.
7. Vexler, V. I. -- Developed a design for an accelerator (synchrotron) of relativistic particles, i.e., particles having such great velocity that it is impossible to accelerate them in a cyclotron, due to the relativistic dependence of mass on velocity. MacMillan, in the US, suggested a similar design but conceded the priority of Vexler.

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8. Tamm, I. E.; Ivanenko, D. D. -- Developed, independently of each other, a hypothesis on the interchangeable nature of nuclear interaction. On the basis of this hypothesis, Tamm developed the theory reconciling the nature of nuclear forces to the interchange of simple particles. Although this theory led to results sharply divergent from those of experiments, nevertheless, its basic ideas led to the further development of the theory of nuclear forces.

9. Alikhanov, A. I.; Alikhanyan, A. I.; Vaysenberg -- Led research expedition to Mt Alagöz (3,200 meters above sea level) in Armenia to study the nature of cosmic rays. Expeditions were organized by the Academy of Sciences of the Armenian SSR. The most remarkable results of the work of these expeditions are in connection with the study of so-called "restricted atmospheric showers," consisting of mesons. The results also include the establishment of the existence of a new form of charged elementary particles of mass 400-900 m (m - mass of an electron), i.e., particles different from all heretofore known particles, including the meson of mass 200 m.

10. Vexler, V. I.; Skobel'tsin, D. V. -- Conducted research on nuclear scatterings under the influence of cosmic rays. This research was carried on in an expedition of the FIAN (Physics Institute, Academy of Sciences) in the Pamirs Mountains at a height of 4,800 meters above sea level and brought conclusive data in favor of the existence of mesons.

11. Mysovskiy, L. V.; Zhdanov, A. P. -- Responsible for the use of thick-layered plates which permitted Zhdanov to obtain remarkable photographs of the complete breaking up of atoms into the elemental particles of which they are composed, under the influence of cosmic rays (so-called "stars").

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